

**East Branch Pecatonica River  
2016 Channel Catfish Hoop Net Survey  
(Above Argyle Dam)**



Caitlin Collies and Bradd Sims  
Wisconsin Department of Natural Resources  
Fisheries Management  
Dodgeville, WI



## **Introduction**

The East Branch Pecatonica River consists of 63.6 miles of river that originates in Iowa County near Barneveld and eventually empties into the Pecatonica River in Lafayette County near South Wayne. Between August 8<sup>th</sup> and August 18<sup>th</sup> of 2016 the Wisconsin Department of Natural Resources Fisheries Management staff conducted a post spawn survey for channel catfish using baited hoop nets. The goal of the survey was to determine relative abundance and size structure for the channel catfish population. Aging structures from each length group were also collected.

Public boat launches can be found above and below the Argyle dam. Shore fishing is also available. Current channel catfish regulations on the East Branch Pecatonica River are no size limit with a daily bag limit of 10. Game fish found during the survey include Walleye, Northern Pike, Black Crappie, and one Brown Trout. Additional fish surveyed included Common Carp, Quillback, White Sucker, Bigmouth Buffalo, Stonecat, Yellow Bullhead, Shorthead Redhorse, Silver Redhorse, and Golden Redhorse.

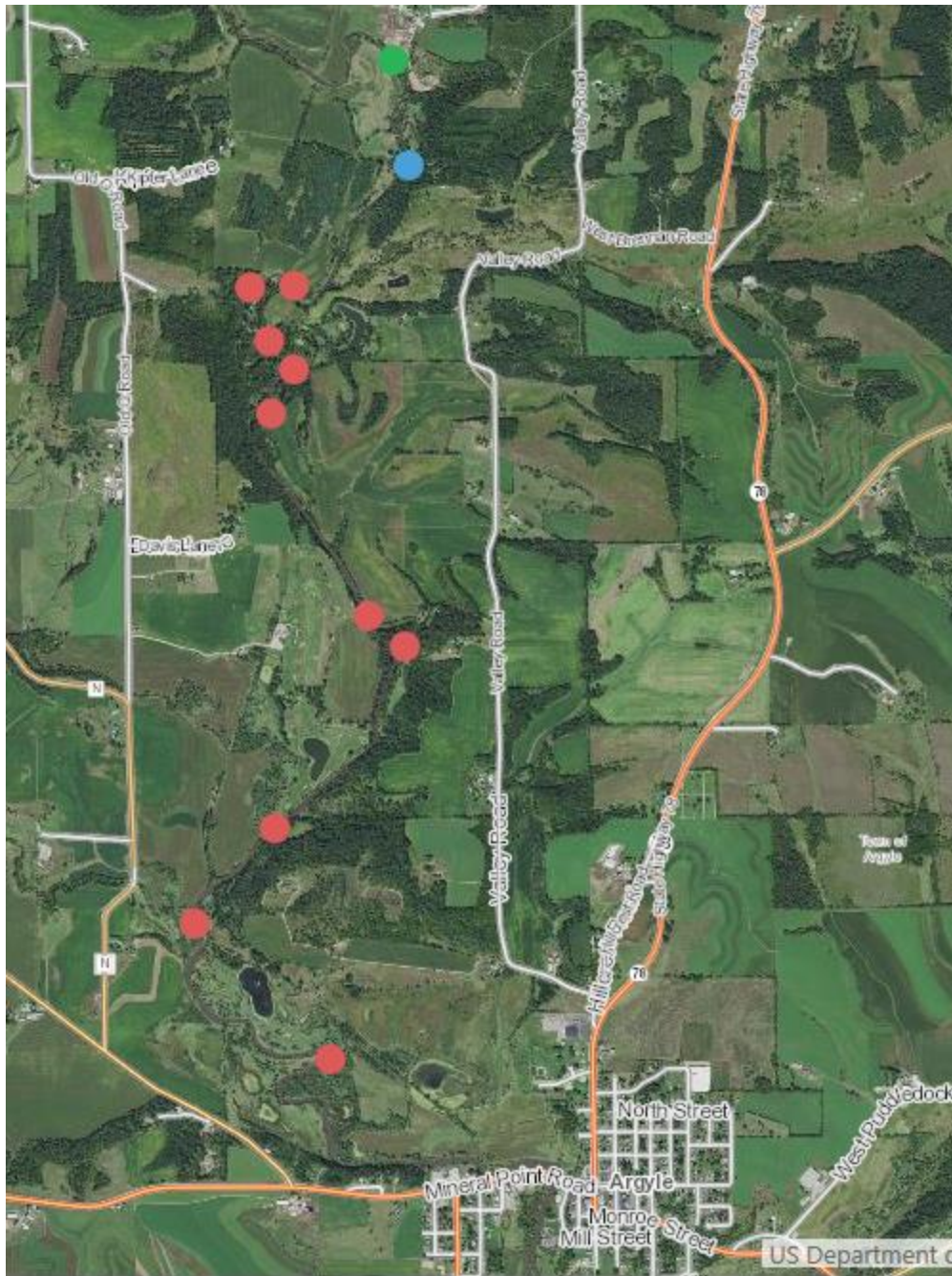
The catfish shown in the cover photo is of a channel catfish found in the 2016 hoop net survey. He was recaptured with a floy tag that was inserted in 2002 when the fish was 9 years old. He is now estimated to be 23 years old and still resides in the same stretch of river.

## **Location**

This survey was conducted on a 4.5 mile stretch of the East Branch Pecatonica River starting above the Argyle dam in Lafayette County (Figure 1). The furthest upstream net (9A) was located approximately 5 miles upstream of the Argyle boat launch. The furthest downstream net was located approximately 0.8 miles upstream of the Argyle boat launch. Coordinates for all nets can be found in table 1.

**Table 1.** Latitude and longitude coordinates for hoop nets.

<b>Net Number</b>	<b>Latitude</b>	<b>Longitude</b>
1	42.70615	-89.88111
2	42.71152	-89.88840
3	42.71535	-89.88407
4	42.72247	-89.87712
5	42.72365	-89.87920
6	42.73167	-89.88425
7	42.73346	-89.88297
8	42.73463	-89.88437
9	42.73664	-89.88541
10	42.73671	-89.88306
5A	42.74159	-89.87688
9A	42.74564	-89.87779



**Figure 1.** 2016 channel catfish survey area and netting locations. Red dots represent nets 1-10. Blue dot represents relocation of net 5 and the green dot is the relocation of net 9.

## **Physical Characteristics**

The lower section of the survey area on the East Branch Pecatonica River contains sedge and grass dominated wetlands. The substrate in this section is made up of clay and silt. There is a pooling impact from the nearby Argyle dam. The upstream section of the survey area contains wooded riparian areas with rock outcroppings (Figure 2). The substrate in this upper section consists of clay and gravel with occasional areas of bedrock. Fallen trees provide the majority of the instream habitat (Figure 3). Deep holes are not common but occasional holes reach 13 feet deep. Channel depths in the river range from 3-6 feet. Average bank to bank channel width in the survey area was around 70 feet. Bank width was digitized using a 2010 leaf off aerial photo.

Water temperature was taken using a hand held thermometer. Temperatures were taken on August 12<sup>th</sup>, 14<sup>th</sup>, 16<sup>th</sup>, 18<sup>th</sup> with readings of 68°F, 68°F, 69°F, and 64°F respectively. Temperatures were recorded before sampling the first net of each day.



**Figure 2.** Rock outcropping along the East Branch Pecatonica River.



**Figure 3.** Example of common woody debris habitat found in East Branch Pecatonica River.

## **Methods**

Channel catfish were sampled using 10 baited hoop nets over a 10 day period resulting in a total of 100 net nights. Nets were set on August 8<sup>th</sup>, 2016 and sampled every 48 hours until August 18<sup>th</sup>, 2016. Nets 5 and 9 were relocated on August 16<sup>th</sup> and renamed 5A and 9A. Two different sized hoop nets were used. The large hoop net has seven hoops tapering in size from 41 inches to 34 inches outside diameter with a mesh size of one-inch bar. The small hoop net has five hoops tapering in size from 29 inches to 24 outside diameter with a mesh size of one-inch bar. Hoop material is fiberglass. Netting material is a treated nylon (Table 2). Two crowfoot style throats were attached to the second and fourth hoops for both the large and small hoop nets.

**Table 2.** Descriptions and set dates of hoop nets.

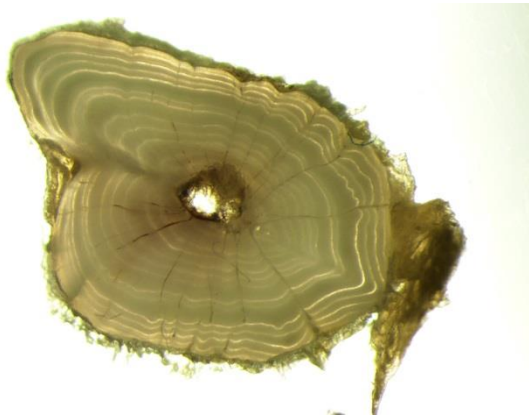
Net Number	Date Net Set	Mesh Material	Total number of hoops	Diameter of first hoop (Inches)	Bar measurement of mesh (Inches)
1	08/08/2016	NYLON	7	41	1
2	08/08/2016	NYLON	7	41	1
3	08/08/2016	NYLON	7	41	1
4	08/08/2016	NYLON	7	41	1
5	08/08/2016	NYLON	5	29	1
6	08/08/2016	NYLON	7	41	1
7	08/08/2016	NYLON	5	29	1
8	08/08/2016	NYLON	7	41	1
9	08/08/2016	NYLON	5	29	1
10	08/08/2016	NYLON	7	41	1
5A	08/16/2016	NYLON	5	29	1
9A	08/16/2016	NYLON	5	29	1

Hoop nets were set parallel with the current having the mouth pointed downstream. Net locations were chosen to optimize catch rates. Nets were set in current runs in mid-channel and along banks having large amounts of woody habitat. Nets were anchored on the upstream end tied to 3/4 inch 4 foot steel rod which was driven into the substrate. The nets were stretched tight and anchored on the downstream end using a 7 x11 inch steel plate. Nets were retrieved pulling up the downstream anchor rope using a grapple hook. Nets were baited with 3 pounds of pressed soy cake meal, dried. Bait was placed in 1/8 inch or 1/4 inch mesh bags. Bait was changed as needed.

Channel catfish were weighed in kilograms and later converted to pounds. Total length was measured to the nearest tenth of an inch. Lengths were taken on all game fish present in nets. Other species present in the nets were only noted.

Pectoral spines were taken from 110 channel catfish to be used as aging structures. Spines were clipped using a pair of wire cutters and then placed in individual envelopes. Approximately 40% of the spines had sections cut using a slow speed isomet saw. Sections were then placed under a microscope and aged (Figure 4). Due to equipment problems the remaining

spines were sanded down using 150 grit and 1000 grit sandpaper before being placed under a microscope for aging.



**Figure 4.** Example of a cross section of a pectoral spine from an East Branch Pecatonica channel catfish.

## **Results and Discussion**

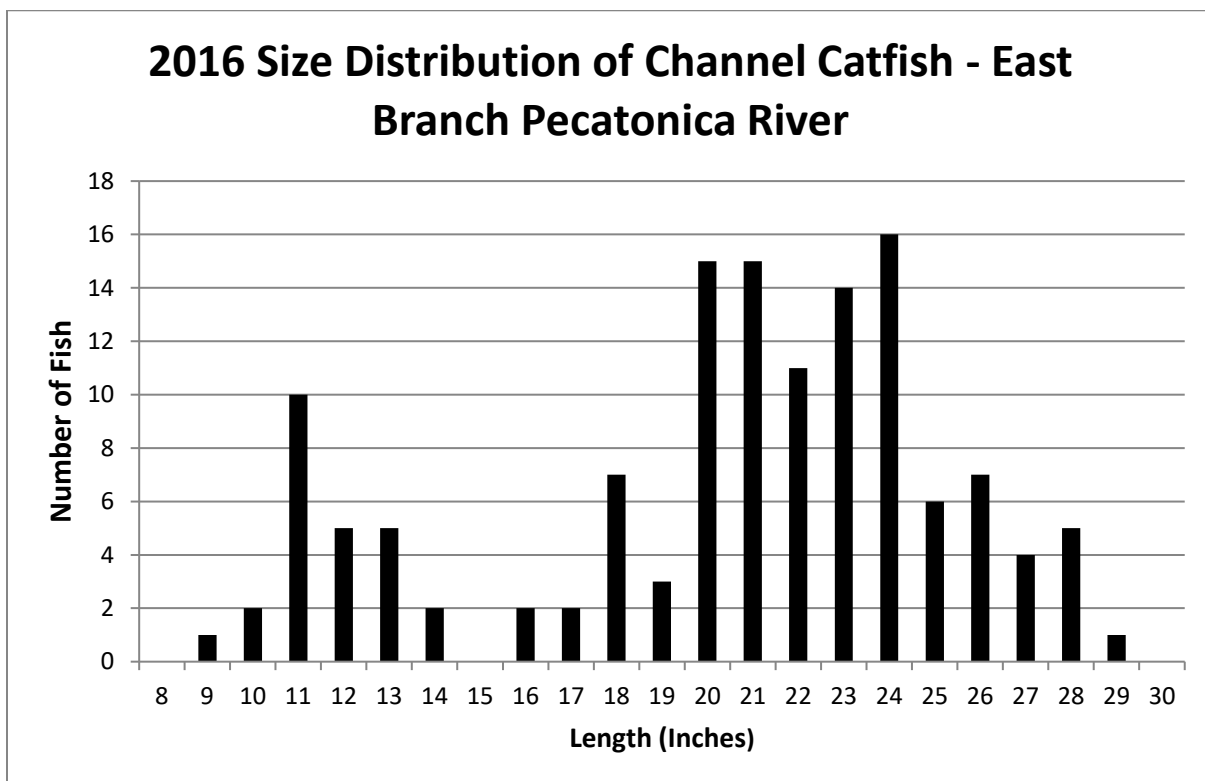
A total of 133 channel catfish were collected during this survey (Table 3). After 100 net nights of sampling the catch per unit effort was 1.33 channel catfish per net night. The average length for channel catfish was 20.8 inches with sizes ranging from 9.3 inches up to 29.5 inches (Table 3). A length frequency distribution can be seen in figure 5. Channel catfish with a total length of 16 inches or greater made up 83% of the total number of channel catfish sampled giving a Proportional Size Distribution (PSD) value of 83 (Table 4). Other Proportional Size Distribution values for channel catfish sampled are  $PSD_{24} = 30$ ,  $PSD_{28} = 4.6$ , and  $PSD_{36} = 0$  (Table 4).

In 2002 the Wisconsin Department of Natural Resources Fisheries Management staff conducted a similar baited hoop net survey along the same stretch of the East Branch Pecatonica River. The team set 5 nets for 3 nights for a total of 15 net nights. The 2002 survey had a CPUE of 5.5 channel catfish per net night with an average catfish length of 17.5 inches. Channel catfish size ranged from 8.9 inches up to 29 inches (Table 3). Channel catfish with a total length of 16 inches or greater made up 72.7% of the total number of channel catfish sampled giving a PSD value of 72.7 (Table 4). While the size range found in 2002 was similar to that found in 2016, the average size of the channel catfish in 2016 was larger and the percentage of preferred and memorable size channel catfish in the population has increased since 2002.

**Table 3.** Catch summary of channel catfish surveyed during the 2016 baited hoop net survey on the East Branch Pecatonica River.

Species/Year	Total Number Collected	CPUE	Average Length (Inches)	Minimum Length (Inches)	Maximum Length (Inches)
Channel Catfish 2016	133	1.33	20.8	9.3	29.5
Channel Catfish 2002	84	5.5	17.5	8.9	29

\*CPUE reported as mean number per net night

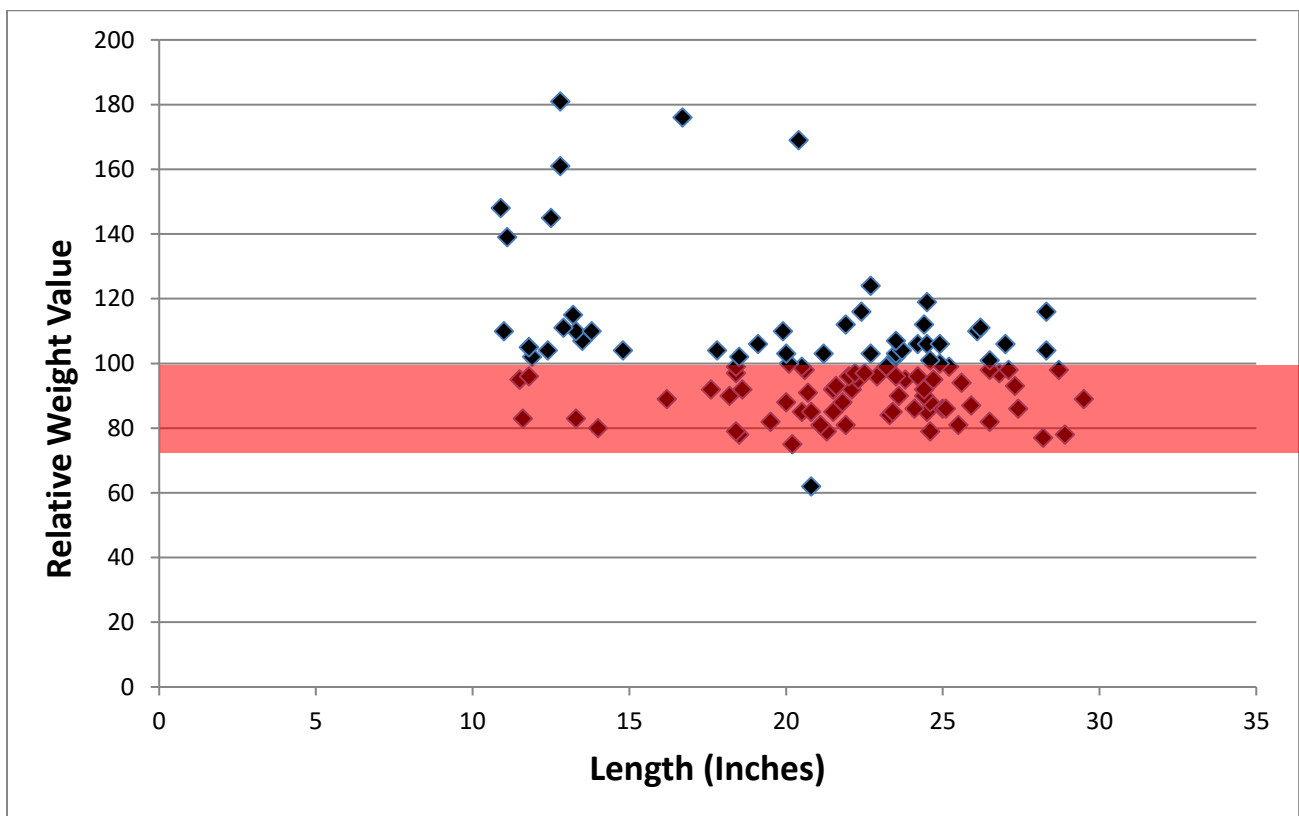


**Figure 5.** Length frequency of channel catfish surveyed during the 2016 baited hoop net survey on the East Branch Pecatonica River

**Table 4.** Proportional Size Distribution values for channel catfish during the 2016 East Branch Pecatonica River baited hoop net surveys.

Species/Year	PSD	PSD <sub>24</sub> Preferred	PSD <sub>28</sub> Memorable	PSD <sub>36</sub> Trophy
Channel Catfish 2016	83	30	4.6	0
Channel Catfish 2002	72.7	9.1	1.3	0

Weight in kilograms was recorded for 113 channel catfish sampled in 2016 on the East Branch Pecatonica River. The weight was later converted into pounds. Channel catfish weights ranged from 0.83 pounds to 10.45 pounds with an average weight of 3.86 pounds (Table 5). Relative weight is used as a condition assessment tool for fish populations. Relative weight ( $W_r$ ) is calculated using the equation  $W_r = (W/W_s \times 100)$  where  $W$  is the recorded fish weight and  $W_s$  is the standard weight for fish of the same length. A relative weight value of 100 is optimal. Relative weight values ranged from 62 to 181 with an average relative weight of 99.7 (Figure 6).



**Figure 6.** Relative weight at length for channel catfish, 2016 hoop net survey East Branch Pecatonica River. Average condition values (75-100) are shaded red.

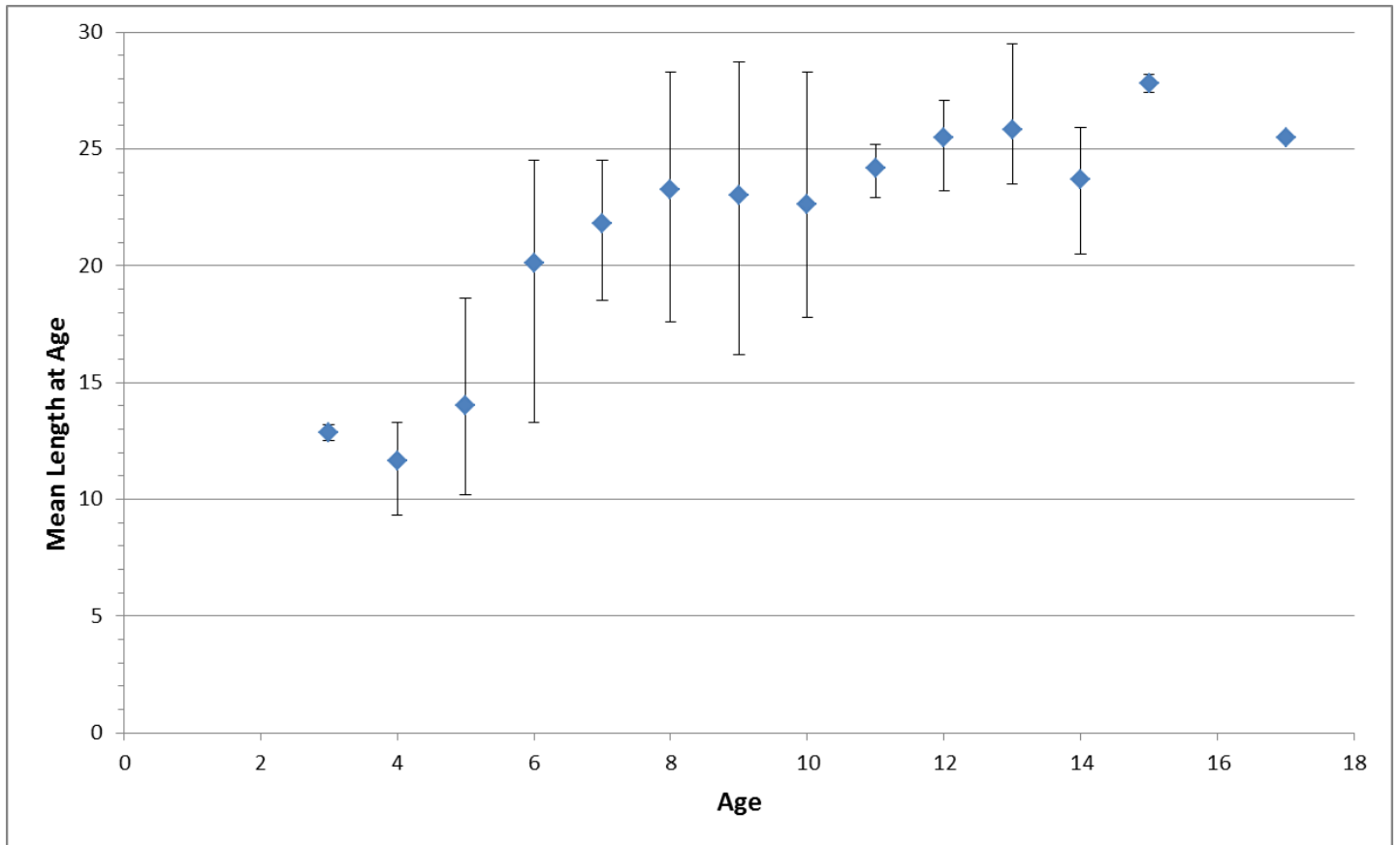
**Table 5.** Weight and relative weight summaries of channel catfish during the 2016 East Branch Pecatonica River baited hoop net surveys.

Species	Mean Weight (lbs.)	Minimum Weight (lbs.)	Maximum Weight (lbs.)	Mean Relative Weight	Minimum Relative Weight Value	Maximum Relative Weight Value
Channel Catfish	3.86	0.83	10.45	99.7	62	181

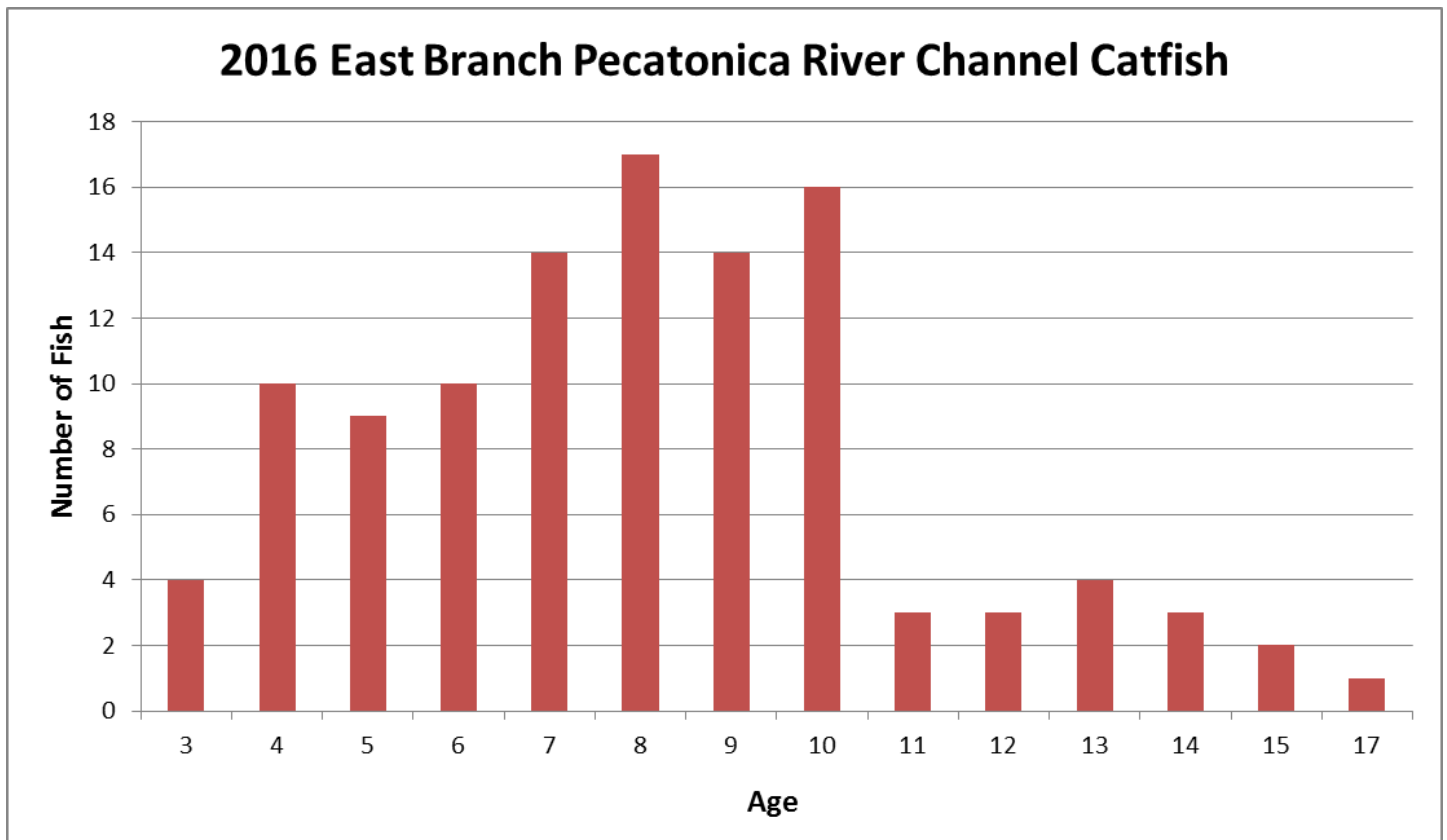
Pectoral spines were taken from 110 Channel catfish to be used for aging. Ages ranged from 3 to 17 with every year being represented in between with the exception of 16. The number of fish per age group and the average size per age group can be seen in table 6 below. Growth in the channel catfish is overall slow but their growth especially slows after age 6. Mean length at age is graphed in figure 7. Age frequency of the sample is displayed in figure 8.

**Table 6.** Age summaries of channel catfish surveyed during the 2016 East Branch Pecatonica River baited hoop net surveys.

Age (observed annuli)	Number of Fish In age group	Average Length (Inches)	Minimum Length (Inches)	Maximum Length (Inches)
3	4	12.83	12.5	13.2
4	10	11.64	9.3	13.3
5	9	13.99	10.2	18.6
6	10	20.09	13.3	24.5
7	14	21.81	18.5	24.5
8	17	23.27	17.6	28.3
9	14	23.02	16.2	28.7
10	16	22.63	17.8	28.3
11	3	24.17	22.9	25.2
12	3	25.47	23.2	27.1
13	4	25.8	23.5	29.5
14	3	23.67	20.5	25.9
15	2	27.8	27.4	28.2
17	1	25.5	25.5	25.5



**Figure 7.** Mean length at age for channel catfish in the East Branch Pecatonica River.



**Figure 8.** Number of fish per age group found during 2016 East Branch Pecatonica River survey.

### **Management Recommendations**

The population of channel catfish residing in the East Branch of the Pecatonica River upstream of the Argyle Dam remains stable with good size structure and continues to offer quality angling opportunities.

No management actions are required at this time.